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The PAMPA flights

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Summary

To mark the 50th Anniversary of the wartime weather reconnaissance missions flown with Mosquito aircraft, these operations and the background to them are described.

1. Introduction

With the aim of improving the standard of weather forecasting, meteorological reconnaissance flights were made regularly during the 1940s to obtain observations from the data-sparse areas of the North Sea and eastern Atlantic. Tracks, schedules and operating procedures for these flights were all standardized and many details have been published (e.g. Air Ministry (AHB) 1954, Kraus 1985, Ogden 1985, Yates 1986, Rackliff 1987). But only passing references (Rackliff 1987, Ratcliffe 1987) have appeared in meteorological publications about a quite different type of weather reconnaissance; this was that made over enemy territory primarily for operational rather than synoptic reasons. Those missions were known as PAMPA (Photographic and Meteorological Photography Aircraft) flights*.

2. The formation of 1409 (Met) Flight in RAF Bomber Command

1401 (Met) Flight based at Mildenhall was responsible for obtaining vertical profiles of temperature and humidity; by mid 1941 it was equipped with Gladiators for the famous THUM (Temperature and HUMidity) flights and with Spitfires for the complementary PRATA (PRessure And Temperature Ascent) flights. During August of that year two additional Spitfires were allocated to the Flight specifically to undertake 'long-range reconnaissance over enemy and enemy-occupied territory. Tracks laid on as required'. (Meteorological Office Archives); this was the new PAMPA role. In late October the Flight moved to Bircham Newton where 1403 (Met) Flight was based to operate the RHOMBUS flights over the North Sea; in January 1942 the two Flights were amalgamated and all the operations were then moved to the satellite airfield at Docking (Bowyer 1979). The PAMPA Spitfires were replaced during the following month by two Mosquito IV aircraft which carried crews of two and had an endurance of about 4.5 hours (Meteorological Office Archives). Operational PAMPA sorties using the Mosquitos probably started in May 1942 (Rackliff 1987). With Gladiators, Spitfires, Hudsons and Mosquitos for the THUM, PRATA, RHOMBUS and PAMPA flights respectively, 1401 (Met) Flight by then had very wide responsibilities and not surprisingly on 1 August 1942 it was upgraded to become 521 (Met) Squadron (Bowyer 1979).

To meet the need for more operational weather reconnaissance as the RAF Bomber Command offensive gathered momentum, at the end of September the number of Mosquitos in the Squadron was increased from two to eight (Meteorological Office Archives). Not long before this, the new Pathfinder Force (PFF) had been formed in Bomber Command under Gp Capt (later Air Vice-Marshall) Donald Bennett. He had strong views about the importance of operational weather reconnaissance, especially in relation to PFF tasks, and gently tried to bring the PAMPA Flight under his command (Bennett 1958). That did not formally come about until 1 April 1943 when the eight Mosquitos of 521 (Met) Squadron were hived off to form a new 1409 (Met) Flight based at one of the original PFF airfields of Oakington, near Cambridge (see Fig. 1). After converting to Mosquito IXs, the Flight moved to Wyton in January 1944 and remained there for the rest of the War (Bowyer 1979); one Mk. IX aircraft was retained for low-level sorties, but the others were subsequently exchanged for six Mosquito XVIs, painted in PR (photo-recce) blue and equipped with pressurized cabins. All these later aircraft were fitted with extra fuel tanks, both internally and as drop tanks under each wing; this increased the endurance to nearly 6 hours and the extreme range to 2000 miles or so. But it should never be forgotten that the PAMPA Mosquitos carried no bombs and had no defensive weaponry (Currie 1983).

3. Crew selection

Despite their lack of guns for self-protection, the PAMPA crews were often ordered to penetrate deep into Germany, even in broad daylight with no cloud cover. To minimize the chances of fighter interception they naturally flew high (e.g. 30 000 ft or more) and fast whenever possible, but the Me 262 jet fighter which the Luftwaffe brought into service late in the War could outpace the Mosquito, and only the superior manoeuvrability of the latter, allied to a high degree of pilot skill, could then keep them out of trouble (Bennett 1959).

The role of the navigator was equally vital. He had personally to plan the route (see below), then with the aid of Gee and radar monitor the aircraft's progress, advising the pilot of course changes and computing winds *en*

*A new series of so-called PAMPA flights was operated from Waddington between 1946 and 1949 by 61 Squadron, Bomber Command, using Lincoln aircraft; these were not comparable with the wartime missions and are not covered in this article.

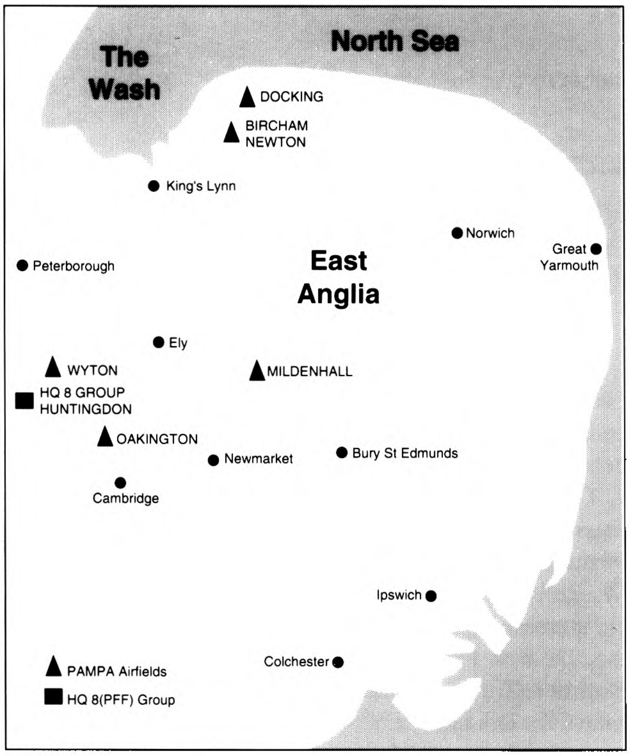

Figure 1. East Anglian locations mentioned in the text.

route; he was also responsible for making the weather observations, a task for which he was specially trained. In these circumstances, it is not surprising that the PAMPA crews were chosen with great care. All the crews in PFF were selected from volunteers, but for 1409 (Met) Flight there were additional constraints; only those who were both commissioned and had been awarded above average ratings at the Mosquito OTUs were considered (Currie 1983).

4. Organization of PAMPA sorties

Having decided on a probable target, and in the light of discussions with his Chief Meteorological Officer (M.T. Spence), the C-in-C of Bomber Command might elect to order a PAMPA flight as an essential preliminary before tactics for PFF and the main force were finalized. In total contrast to the procedures for the regular scheduled meteorological reconnaissance flights, PAMPA sorties might be dispatched at short notice anywhere, at any time, and had to be completed without delay. The required task was detailed to 8 (PFF) Group for action by 1409 (Met) Flight. The navigator of the duty crew then had to prepare his own flight plan to cover the given objectives, avoiding well-defended areas whenever possible and also incorporating sundry changes of course both to mask the specific area of interest and to make it more difficult for fighters to intercept the aircraft. On occasions, the AOC of 8 Group also aranged PAMPA flights to meet specific requests from other Commands or from other services such as the USAAF. On a particular day a single flight might suffice, but as many as four or even more sorties were sometimes mounted within a 24-hour period (Bennett 1958). At full strength 1409 (Met) Flight had 10 crews, and unless formally stood down duty crews had to be ready to carry out any assigned task immediately; moreover, stand-by crews and aircraft were always available so that if an aircraft became unserviceable before or shortly after take-off, a replacement could be airborne very quickly, using the flight plan prepared by the original crew (Currie 1983).

The detailing of the task was strongly influenced by the meteorological input at Bomber Command. Sometimes the objective was to provide a general survey of a broad area which included the target. More usually however, the PAMPA mission was to make detailed appraisals of particular significance for the raid being planned; the emphasis was then primarily on cloud conditions. For example, the zone just behind a cold front is often a very suitable location for clear identification of a target, but it is essential to know whether the front concerned is indeed immediately followed by a significant cloud clearance and if so exactly where the front is, whether it has any waves on it and how steadily it is moving (Ratcliffe 1987).

From late 1943 onwards, the operations of 1409 (Met) Flight and indeed other PFF formations were greatly assisted by the availability of FIDO, the first installation of which was at Graveley, another of the original four PFF airfields. The first landing in fog using FIDO was made there by Bennett himself in July 1943, and other nearby airfields were equipped with FIDO later that year, including Downham Market which became an 8 Group station in March 1944 (Ogden 1988). Knowing that aircraft could be landed safely in fog meant that PAMPA sorties could be dispatched when, without FIDO, they would have been grounded.

5. Meteorological procedures

Having fought hard to bring the PAMPA Flight under his command, AVM Bennett naturally took a keen interest in its work, and he maintained a close liaison with M.J. Thomas, his Group Meteorological Officer. Each sortie was given detailed objectives not only on where to go but also on what to look out for. The making of comprehensive cloud observations was paramount — types, amounts, height of tops and often of bases as well. To assist the navigator he was provided with a hand-held camera which could be used looking forward through the windscreen to photograph interesting cloud features such as cumulonimbus. The aircraft might then deliberately fly into Cb clouds at various levels to determine the degrees of turbulence and airframe icing which might be highly relevant for the forthcoming operation. Although it is normally safer when flying at higher altitudes, the aircraft often made descents in key areas to measure the heights of cloud tops and bases and to obtain vertical temperature profiles (Currie 1983). The computation of winds was a routine procedure and accuracy here clearly depended on the efficiency of the navigation.

Photograph by courtesy of the Royal Air Force Museum

Figure 2. De Havilland Mosquito P.R. XVI

On return to Oakington or Wyton, the navigator reported immediately on a scrambler telephone to the 8 Group Met. Office at Huntingdon who passed on the information to HQ Bomber Command and also prepared a summary report for transmission to ETA (the Met. Comms Centre at Dunstable); this latter text was subsequently disseminated on the meteorological teleprinter broadcast to all the Bomber Command outstations.

Although the majority of PAMPA operations were pre-attack sorties that reported to base before the main force took off, sometime after PFF introduced the procedure whereby a Master Bomber controlled the attack over the target (a practice that started late in 1943). 1409 (Met) Flight also flew additional missions some 30 minutes ahead of the PFF target markers; the PAMPA pilot then gave an up-to-date weather report for the target area directly by radio to the Master Bomber or his Deputy (Currie 1983).

6. Postscript

To forecasters at Bomber Command outstations between 1942 and 1945, the PAMPA.reports on the teleprinter broadcast provided most welcome factual information to clothe the bare bones of the operational forecasts we received and on the basis of which we had to brief the main-force crews. But their primary contribution was at the heart of the operational planning at Group and Command level. The last words should be left to AVM Bennett: '1409 (Met) Flight never hesitated and never failed to do their job with absolute reliability and constancy. The danger was extreme and it was a most nerve-wracking job for the crews, (yet) in the final analysis their losses were extremely low, although not quite as low as in the rest of PFF.'

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